

GAO

United States General Accounting Office

Report to the Chairman, Committee on
Armed Services, House of
Representatives

AD-A243 255



NAVY SUPPLY

Some Aircraft and
Ship Parts Should Be
Replaced Rather Than
Repaired



91-17448





United States
General Accounting Office
Washington, D.C. 20548

National Security and
International Affairs Division

B-236761

December 2, 1991

The Honorable Les Aspin
Chairman, Committee on
Armed Services
House of Representatives

Dear Mr. Chairman:

In response to discussions with your office, we reviewed the Navy's management of repairable aircraft and ship components. We found that the Navy is incurring unnecessary costs by repairing items that are excess to current needs and items that can be purchased at a lower cost.

We are sending copies of this report to the Chairmen, Senate Committee on Governmental Affairs, House Committee on Government Operations, Senate Committee on Armed Services, and Senate and House Committees on Appropriations; the Director, Office of Management and Budget; and the Secretaries of Defense and the Navy.

Please contact me on (202) 275-6504 if you or your staff have any questions concerning this report. Major contributors to this report are listed in appendix II.

Sincerely yours,

Martin M Ferber
Director, Navy Issues

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Executive Summary

Purpose

In fiscal year 1990, the Navy obligated \$1.1 billion for depot-level repair of aircraft and ship components. At the request of the House Committee on Armed Services, GAO reviewed the Navy's repairable program to determine whether (1) unnecessary repairs were being made and (2) repair data was accurate.

Background

Generally, repairing components is less costly and takes less time than purchasing new ones. Navy policy requires that broken or defective items, such as circuit boards, fuel tanks, and electronic communication parts, be repaired unless (1) they can be replaced at a lower cost or (2) the Navy already has an excess supply of the item. Simple repairs are made on-site at user activities. Parts requiring more complex repairs are returned to the supply system for repair by Navy depots, commercial contractors, or other military services.

The Aviation Supply Office and the Ships Parts Control Center are the Navy inventory control points responsible for managing repairable items. The Aviation Supply Office manages 61,000 depot-level repairables valued at \$11.3 billion, while the Ships Parts Control Center manages 105,000 depot-level repairables valued at \$2 billion.

Results in Brief

Although the Navy has policies in place to preclude unnecessary repairs, the inventory control points are not following these policies. The number of items that are excess to current needs are understated in the repair program, and many repairable items are not reviewed to determine whether they can be more economically replaced. As a result, the Navy is spending considerable sums to repair items it has an excess of or that could be replaced at less cost.

In addition, much of the Navy's data used in managing the repair program is inaccurate. Reliance on inaccurate data frequently results in overestimation of item requirements and, ultimately, excess assets.

Principal Findings

Excess Assets Are Being Repaired

Navy policy prohibits repairing items that are excess to current needs. However, because of inadequate procedures for identifying excess assets in the repair program and the failure to provide information on

these excesses to all activities making repairs, the Navy spends millions of dollars annually to repair assets that have no known wartime or peacetime requirements. During the 6-month period from April to September 1990, the Aviation Supply Office made 1,643 repairs costing \$2.5 million, and the Ships Parts Control Center made 6,607 repairs costing \$6.7 million for items that were excess to current needs.

When serviceable, ready-for-issue excess assets are used in lieu of repair, the Navy prevents unnecessary repairs and reduces the need for funds to pay for repair costs. The Aviation Supply Office's repair program understates the number of items that are excess to current needs. Altogether, GAO identified 9,881 items that were in excess, but the Aviation Supply Office's repair program did not consider them to be in excess. The Ships Parts Control Center's repair program, which does not even identify excess items, had 30,306 such items.

In addition, the Aviation Supply Office provides information on excess items to Navy depots, but not to commercial repair facilities or to repair facilities of other military services. As a result, these facilities are repairing items that are excess to current Navy needs. Because its repair program does not identify excess items, the Ships Parts Control Center provides no information on these items to any repair activity.

Items With Lower Replacement Costs Are Being Repaired

Contrary to Navy policy, the Navy is repairing many items that could be more economically replaced. Both the Aviation Supply Office and the Ships Parts Control Center periodically analyze their repairable files to identify items where the repair costs appear to be greater than the replacement costs. They then conduct some economy-of-repair reviews to determine whether these items can indeed be more economically replaced than repaired. However, many items are excluded from review. Items procured by the other military services are not reviewed because the inventory control points believe they have no control over the procurement price. Items that have not been purchased within the past 2 years are not reviewed because the inventory control points believe the purchase price is too old for comparative purposes.

GAO's analysis of 25 randomly selected items identified as repairable by the Aviation Supply Office revealed that 18 of the items could be more economically replaced than repaired. The combined unit replacement costs for the 18 items totaled \$17,415, while the combined unit repair costs totaled \$25,986. GAO believes that the source or lack of recent procurements should not preclude economy-of-repair reviews.

Up-to-date repair and replacement prices are necessary in any event to properly manage the repairables program and make effective reviews.

Repair Program Data Is Not Accurate

Maintenance of accurate data on the percentage of parts that repair activities try to repair but cannot and the length of time it takes to repair an item is essential for effective management of the repairable program.

GAO analyzed repair data on 145,334 repairable items managed by the Aviation Supply Office and Ships Parts Control Center. GAO isolated data on items that deviated from standards suggested by the Naval Supply Systems Command on the percentage of parts that can be repaired and the length of repair times. This analysis identified deviations in the percentage of parts that can be repaired for 15,326 items and deviations in repair times for 48,995 items.

At the Aviation Supply Office, GAO randomly sampled 25 items from each group of deviations and found that the records frequently were not accurate and tended to overstate the repair requirements. Overstated requirements ultimately lead to the accumulation of excess stocks. After researching the items, the Aviation Supply Office adjusted the percentages that could be repaired for 8 of the 25 items and adjusted the repair times for 23 of the 25 items. The repair times for 19 of the items were decreased, and the repair times for the other 4 items were increased.

Recommendations

To comply with Navy policy not to repair items that are excess to current needs, GAO recommends that the Secretary of the Navy:

- Direct the Aviation Supply Office and Ships Parts Control Center to identify excess assets in repairable management programs consistent with the Navy definition of assets that are excess to current needs.
- Provide all activities making Navy repairs, including commercial and other military service activities, with information that indicates when items are excess to current needs and should not be repaired.

In addition, GAO recommends that the Secretary:

- Review all items when it appears that replacement is less costly than repair, including those procured by other agencies and those that have not been purchased recently, and use current pricing data in these economy-of-repair reviews.

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- Routinely identify item repair program data that deviates from acceptable standards, review the data for accuracy, and revise inaccurate data.

Agency Comments

The Department of Defense (DOD) did not agree that the recommended actions are necessary. DOD stated that appropriate procedures are already in place to preclude the identified problems and that the GAO findings were based on faulty data. DOD's comments are included as appendix I.

GAO continues to believe that the findings are valid and that the recommendations, if implemented, would address the problems identified. In some cases, DOD appears to have misinterpreted GAO's concerns. For example, GAO agrees with DOD's statement that excess assets are considered during the initial repair requirements determination process. However, GAO found that the Navy does not have effective controls to prevent the repair of items that become excess to current needs after the initial requirements determination. GAO has clarified the conclusions and recommendations to prevent any further misinterpretation.

Regarding the comment that GAO used faulty data, the Navy inventory control points had assured GAO that the data could be relied on. DOD did not provide GAO with the analysis that supported its position on faulty data. Based on a description of DOD's analysis by Navy personnel, GAO does not believe that DOD demonstrated that the data provided to GAO by the Navy inventory control points was faulty. Finally, GAO does not agree that appropriate procedures are already in place to preclude the identified problems. For example, when GAO asked the Aviation Supply Office to assess the validity of data on 25 items that could be repaired and the repair time on another 25 items, the Office corrected the data on a high percentage of the items, 8 and 23 items, respectively.

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Abbreviations

ASO	Aviation Supply Office
DOD	Department of Defense
SPCC	Ships Parts Control Center

Introduction

Navy inventories include two types of material: consumables and repairables. Consumables are individual parts or assemblies that are disposed of when replaced. Repairables, on the other hand, are components or assemblies that are returned to the supply system for repair when replaced.

The Naval Supply Systems Command administers the Navy's supply system and provides supply management policies and procedures to its inventory control points. The Aviation Supply Office (ASO) and the Ships Parts Control Center (SPCC) are the inventory control points responsible for determining and executing repair requirements. ASO manages 61,000 depot-level repairable items valued at \$11.3 billion, and SPCC manages 105,000 depot-level repairables valued at \$2 billion.

The Navy has three levels of repair. Organizational repairs are made by operating units on a day-to-day basis to support their own operations. Intermediate repairs are made by designated maintenance activities to directly support user organizations. Depot-level repairs are made when the repair is beyond the capability of organizational and intermediate repair activities. The Navy uses its own depots, commercial repair facilities, and other military service repair facilities to make depot-level repairs. The inventory control points determine who will do the repair on the basis of repair price and repair turnaround time considerations.

Generally, repairs are less costly and take less time than purchasing new items. Navy policy requires that broken or defective items be repaired unless (1) they can be replaced at a lower cost or (2) the Navy already has an excess of the item. The Navy obligated \$1.1 billion for depot-level repair of aircraft and ship components in fiscal year 1990. Table 1.1 shows the obligations by organization and type of repair activity.

Table 1.1: Repair Obligations for Fiscal Year 1990 by Activity Performing the Repair

Dollars in millions				
Organization	Navy activity	Commercial activity	Other military services	Total
ASO	\$544.6	\$283.8	\$51.0	\$879.4
SPCC	65.6	151.7	6.7	224.0
Total	\$610.2	\$435.5	\$57.7	\$1,103.4

Objectives, Scope, and Methodology

Our objectives were to evaluate the Navy's repairable program, identify any management weaknesses, and determine actions that could be taken to correct the weaknesses. Specifically, we (1) determined whether

repairs were being made to items that exceeded authorized supply levels (long supply), (2) evaluated the Navy's procedures for making repair versus buy decisions, and (3) assessed the accuracy of repair program data.

We held discussions and collected information at the Office of the Secretary of Defense, the Naval Supply Systems Command, the Fleet Material Support Office, ASO, and SPCC. We reviewed the Navy's repair management systems and related policies and procedures for managing repairable items.

To evaluate whether the Navy had controls in place to ensure that only needed material was being repaired, we analyzed budget documents and repair management files maintained by ASO and SPCC. From a universe of 128,436 items, we identified those that had no known current requirements. We ascertained the reasons why and the extent that items with no known current requirements were being repaired.

To evaluate whether the Navy was making proper repair or buy decisions, we determined the number of ASO and SPCC items where automated file data indicated the cost to repair the item equaled or exceeded the cost to replace the item through procurement. At ASO, we randomly sampled 25 of these items from a universe of 1,157 items and identified the reasons why the items continue to be classified as repairables. We verified replacement prices by checking procurement contracts and repair prices by checking Navy repair cost formulas or commercial repair contracts.

To determine whether ASO and SPCC repair management file data accurately portrays the percentage of failed parts that could be returned to usable condition and the length of time required to repair items, we first determined the total number of instances where repair items deviated from standards suggested by the Naval Supply Systems Command. At ASO, we randomly sampled 25 items from 2,958 items where the percentage of parts that could be repaired were below acceptable standards and 25 items from 5,121 items where repair times exceeded acceptable standards. We presented these items to ASO to verify the accuracy of the file data and to determine why the items deviated from acceptable standards.

Although the sample items reviewed at ASO are representative of the sample universes, we did not project the monetary results to the universes because the sample sizes were relatively small. We did not sample items at SPCC because of time constraints.

We used the same computer programs, reports, records, and statistics the Navy used to manage inventories, make decisions, and determine requirements. We did not independently determine the reliability of all of these sources. However, we did make some tests to determine the accuracy of the repair management files.

We performed our review between December 1990 and July 1991 in accordance with generally accepted government auditing standards.

Long Supply Assets Are Being Repaired

The Navy needlessly spends millions of dollars to repair components that the Navy already has more of than it believes are needed. These components are said to be in long supply and include such items as circuit boards, fuel tanks, and electronic communication parts. Unnecessary repairs are being made because the inventory control points responsible for managing repairables¹ either (1) use a long supply indicator that underestimates actual long supply assets or (2) use no type of long supply indicator at all. In addition, lists identifying items in long supply are not adequately disseminated to commercial contractors and other military service repair facilities. As a result:

- ASO had 9,881 items and SPCC had 30,306 items where the repair management files did not show that the items were in long supply even though they, in fact, were in long supply.
- Between April and September 1990, ASO made 1,643 repairs costing \$2.5 million and SPCC made 6,067 repairs costing \$6.7 million for items in long supply.

Policies Prohibit Repair of Unneeded Assets

Navy policy prohibits the repair of assets in depot repair programs when new or reconditioned assets are in long supply. When serviceable, ready-for-issue assets in long supply are used in lieu of repairing items, the Navy prevents unnecessary repairs and reduces the need for funds to pay for repair costs.

The Department of Defense (DOD) and the Navy stress the economic benefits of using long supply assets in ready-for-issue condition rather than repairing items that are not in this condition. Items requiring repairs are stored until they are needed. DOD requires item managers to furnish high-cost long supply assets, when practicable, to contractors for use in production contracts for major weapon systems and equipment. The Navy has similar requirements.

In addition, the Navy uses a Master Repairable Item List of all repairable items to inform shore activities and operating forces where and how to ship unserviceable depot-level repairables. The list contains a long supply indicator that informs Navy depots that serviceable assets

¹In managing the repair program, the inventory control points maintain an automated repair management file. This file contains information used in making repair decisions and includes data elements such as repair activities, repair prices, repairs completed, and repair turnaround times. One of the data elements in the file can be used to indicate whether ready-for-issue long supply assets are on hand. When the long supply indicator is coded "y" (yes), items should be requisitioned rather than repaired.

are in long supply and that items needing repair should be replaced rather than repaired. The Office of the Chief of Naval Operations also requires that long supply assets be used in lieu of concurrent rework, which involves the removal and repair of repairable subcomponents from a higher assembly or end item that is being repaired at a Navy depot.

Procedures for Identifying Long Supply Assets Are Inadequate

Navy procedures for identifying long supply assets in the repair program underestimate the number of items actually in long supply. As a result, unnecessary repairs are being made.

DOD and the Navy define long supply as assets that exceed the number of assets that must be purchased to satisfy known budget year requirements. As such, long supply assets have no current peacetime or war-time requirement. At the end of fiscal year 1990, the Navy reported \$9.9 billion in long supply assets.

The Fleet Material Support Office developed a computer program for assigning long supply indicators that ASO and SPCC could use to provide repair activities with data on the long supply status of items after the initial repair requirements determination. The program assigns a long supply indicator to an item if the number of on-hand, ready-for-issue repairables is greater than

- a 30-month supply of assets, or
- sufficient assets to satisfy known budget year requirements and unfunded war reserves.

However, ASO found that the use of the Fleet Material Support Office program resulted in a larger number of items indicated as being in long supply than it wanted to manage. Therefore, ASO changed the criteria for classifying items in long supply. This change decreased the number of items indicated as being in long supply.

SPCC does not use a long supply indicator to identify long supply items in its repairable management files or on its Master Repairable Item List. SPCC officials told us they rely on other means to prevent repair of items in long supply. For example, they try not to ship failed parts to repair activities unless there is a projected need for the parts.

Inadequate procedures for identifying long supply items have affected large numbers of repairable items. Our analysis of 44,524 depot-level

repairables managed by ASO and 83,912 depot-level repairables managed by SPCC showed that thousands of items that actually were in long supply were not indicated to be in long supply in managing repairs for the items.

We compared the number of on-hand, ready-for-issue items that were in long supply between April and September 1990 with items that had a long supply indicator in the repairable management files. Our analysis showed that 9,881 of the 19,000 ASO depot-level repairable aeronautical items in long supply did not have a long supply indicator. For example, 195 ready-for-issue fuel injection nozzles actually were in long supply, although no indicator showed any of the nozzles were in long supply. Since SPCC does not maintain a long supply indicator in its repairable management file, none of the 30,306 depot-level repairables in long supply had an indicator. Table 2.1 shows the results of our analysis comparing the items that actually were in long supply with those with a long supply indicator.

Table 2.1: Comparison of Items in Long Supply and Items With a Long Supply Indicator

	Total items ^a	Items in long supply	Items with a long supply indicator	Difference
ASO	44,524	19,000	9,119	9,881
SPCC	83,912	30,306	0	30,306
Total	128,436	49,306	9,119	40,187

^aAlthough the total number of repairable items at ASO and SPCC are 61,000 and 105,000, respectively, some similar individual items are grouped and are considered as one item for repairables management.

Opportunities Exist for Saving Repair Costs

To determine if repair activities were repairing items in long supply, we determined the total number of items that had ready-for-issue long supply assets on hand between April and September 1990. We compared these items to repair actions during the same period. Our analysis showed that Navy repair activities made 7,710 repairs costing \$9.2 million on long supply items. Of these, 1,643 repairs were made on ASO-managed items and 6,067 repairs were made on SPCC-managed items. Table 2.2 shows the results of our analysis.

Table 2.2: Summary of Repair Actions on Long Supply Items

	Number of items	Repair actions	Cost of repair actions
ASO	562	1,643	\$2,482,435
SPCC	1,473	6,067	6,692,681
Total	2,035	7,710	\$9,175,116

At ASO, the long supply indicator in the repairable management files showed that serviceable long supply assets existed for 325 of the 562 items. On these items, 981 repair actions costing \$1.3 million were taken. The indicator did not show that long supply assets existed for the other 237 items where 662 repair actions costing \$1.2 million were taken. As noted previously, SPCC does not use a long supply indicator.

We analyzed the repair data at ASO to determine which repair activities were making the unnecessary repairs. Our analysis showed that most were made by commercial and other military service repair activities. These repair activities made 27 percent of ASO's total repairs, but accounted for 80 percent of the repair actions and 82 percent of the cost of repairs when the long supply indicator showed that long supply assets existed. ASO does not provide these activities with data on items in long supply.

SPCC's repair management file does not identify whether Navy, other military service, or commercial repair activities were used to make the repairs. Therefore, we did not perform a similar analysis at SPCC.

The following are examples of unnecessary repairs made by repair activities.

- The Naval Aviation Depot at Cherry Point, North Carolina, repaired 35 fuel injection nozzles (NSN 2915-00-126-5730) used on the F-4 aircraft's J-79 engine between April and September 1990. The cost of repairing each nozzle was \$399; the total repair cost amounted to \$13,965. During the period of repair, 195 ready-for-issue nozzles were in long supply and most were stored at Cherry Point. However, the long supply indicator in ASO's repair management file did not indicate the nozzles were in long supply.
- A commercial repair facility repaired eight circuit card assemblies (NSN 5998-00-004-3830) used in computerized automatic testers between April and June 1990. The cost of repairing each unit was \$1,945; the total repair cost amounted to \$15,560. During the period of repair, 11 serviceable assemblies were in long supply and most were

stored at the commercial facility. ASO classified 6 of the 11 assemblies as potential excess, meaning there were no retention requirements for the assemblies and ASO should have considered disposing of on-hand assemblies. The long supply indicator in ASO's repair management file also indicated that the assemblies were in long supply.

- Under an interservice agreement with ASO, the Army repaired eight servocylinders (NSN 1650-00-011-9022) used on the H-1 helicopter between April and June 1990. The unit repair cost for the eight servocylinders was \$1,876, and the total repair cost amounted to \$15,008. During the repair period, 15 serviceable servocylinders were in long supply. The long supply indicator in ASO's repair management file also indicated that the assemblies were in long supply.
- The Naval Aviation Depot at Jacksonville, Florida, repaired one horizontal stabilizer (NSN 1560-00-256-4420) used on the A-7 aircraft between April and June 1990. The repair cost was \$20,400. During the repair period, six serviceable stabilizers were in long supply. The long supply indicator in ASO's repair management file did not indicate that any stabilizers were in long supply.

Conclusions

DOD and Navy policies require the efficient use of long supply assets, and the long supply status of items are taken into account when setting initial repair requirements. However, assets that subsequently become long supply are not given adequate consideration in managing the repairable program. ASO uses procedures that are not responsive to these changes and tend to understate the number of items actually in long supply, while SPCC does not use long supply information at all. In addition, neither inventory control point disseminates long supply information to commercial and other military service repair facilities where it is needed. As a result, the Navy spends millions of dollars repairing assets that are not currently needed.

Recommendations

We recommend that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to implement procedures that give better consideration to items that become long supply in managing its repair programs. To comply with Navy policy not to repair items in long supply, we recommend that the Commander

- direct ASO to use a long supply indicator in repairable management programs that is consistent with the Navy definition of long supply;

- direct SPCC to develop a long supply indicator that is consistent with the Navy definition of long supply and use the resultant indicator in repairable management; and
- provide all repair activities, including commercial and other military service activities, with information that indicates when ready-for-issue assets already exist in long supply and, therefore, repairs should not be made.

Agency Comments and Our Evaluation

DOD agreed that long supply assets should be considered in the repair program but did not agree that the actions we recommend are necessary. DOD stated that appropriate procedures are already in place and that long supply assets are considered during the repair requirements determination process. DOD also stated that the long supply indicator is not used to determine repair requirements. In addition, DOD was of the view that we overstated the magnitude of repairs to items in long supply.

DOD appears to have misinterpreted our concerns. We recognize that the inventory control points use the Repair Requirements Determination Model to determine repair requirements and that the long supply indicator is not used in this process. We also recognize that the long supply status of items, not the indicator, is considered during the initial repair requirements determination process. However, these are both aspects of the initial requirements determination process. Our analysis focused on whether adequate controls exist to prevent the repair of items that fall into a long supply status after the initial requirements determination. Our findings indicate that the Navy does not have effective controls in place to prevent these repairs.

Specifically, in managing repairs the inventory control points do not (1) identify long supply items on a basis consistent with the Navy definition of long supply and (2) effectively notify repair activities when items have fallen into long supply after the initial requirements determination. Our recommendations address these shortcomings and we have clarified the conclusions and recommendations to prevent any further misinterpretation.

DOD took exception to our finding that SPCC made 6,067 repairs costing \$6.7 million for items in long supply between April and September 1990. DOD stated that only 158 repair actions actually occurred during that period and that the remainder were valid repair actions completed prior to April 1990 for items in short supply at the time. It stated that a similar overstatement occurred at ASO. Our analysis of repair actions was

based on data in the repair management files. At the time of our review, systems analysts at both SPCC and ASO assured us that the data could be relied upon to show when repair actions actually occurred.

In response to DOD's comments, we asked SPCC officials for the analysis supporting the figures cited by DOD. They agreed to provide such an analysis but we had not received it at the time our report was issued. However, a SPCC official told us that, to arrive at the 158 repairs cited by DOD, SPCC had compared the long supply items we had identified to the items scheduled for repair between April and September 1990. Such a comparison does not account for lags between scheduled repairs and actual repairs—items may become long supply in the interim. If an item was not scheduled for repair during the period, SPCC did not determine (1) when the item was scheduled for repair, (2) when the item was actually repaired, or (3) the long supply status of the item at the time of repair. Without this type of analysis, we do not believe that DOD adequately addressed our findings.

Items That Are Less Costly to Replace Are Being Repaired

Contrary to Navy policy, many items are being repaired that could be more economically replaced. The Navy conducts some economy-of-repair reviews if there are indications that replacement would be less costly than repair. However, many items are excluded from review because they are procured by other military services or have not been procured recently. Our analysis of 25 randomly selected items identified as repairable by ASO indicated that it would have been more economical to replace 18 of the items. The combined unit replacement costs for the 18 items amounted to \$17,415, while the combined unit repair costs amounted to \$25,986.

Effective economy-of-repair reviews will help to ensure that consumable item management is transferred to the Defense Logistics Agency in a systematic manner.

Policy Requires Replacement When Economical

According to Navy policy, items should be replaced rather than repaired if the repair cost equals or exceeds the replacement cost. However, in some cases, the more costly repair may still be necessary if items that take a long time to obtain are in short supply or the item can no longer be purchased. The Navy states that, in general, repairable items can be restored at one-third the cost and in one-half the time required to purchase a new item.

ASO and SPCC periodically analyze their files to identify items that have the potential to be changed from repair to replacement status. ASO generates quarterly reports for all items where file data shows that the repair price is equal to or greater than the replacement price. SPCC generates similar reports on an annual basis. From these reports, items are selected for detailed economy-of-repair reviews. The selected items make up only a small portion of the total number of items in the reports. ASO researches those items that (1) are scheduled for repair, (2) are procured by the Navy, and (3) had a procurement in the past 2 years. Likewise, SPCC researches items that (1) have a projected demand, (2) are procured by the Navy, and (3) had a procurement in the past 2 years.

Most items are excluded from the detailed economy-of-repair reviews. ASO and SPCC officials stated that they do not research items procured by other services because they believe they have no control over the procurement price. The officials stated that they also do not research items that have not had a procurement in the past 2 years because they consider the prior procurement price as too old to compare with current repair prices. In these cases, ASO and SPCC assume the repair price is

lower than the current procurement price even though the latter price is unknown.

Naval Supply Systems Command officials told us the main problem with economy-of-repair reviews is that old replacement prices are not updated by the inventory control points. At one time, the inventory control points contacted manufacturers to update replacement prices. However, they abandoned this procedure because of higher priority work and manufacturers were reluctant to provide estimated prices. The Command officials stated that the inventory control points should maintain current pricing data. The officials also stated that items procured by other military services should not be excluded from economy-of-repair reviews because the principle of comparing replacement prices to repair prices is the same no matter who procures the item.

Opportunities Exist for Savings

At the time of our review, ASO's files identified 1,157 items, and SPCC's files identified 439 items as potentially uneconomical to repair because of high repair costs.

We randomly selected 25 ASO items to determine whether they should be switched to a consumable status. Our analysis showed that the repair costs exceeded the replacement costs in 18 instances. In several of these instances, the Air Force procured the item and sold it to the Navy, with the understanding that the latter would be responsible for repairs. ASO officials did not research these items because, in their opinion, they had no control over the procurement price. The combined unit replacement costs for the 18 items were \$17,415, while the combined unit repair costs were \$25,986.

The following examples illustrate instances where replacement costs are lower than repair costs.

- The Naval Aviation Depot at Alameda, California, repaired eight vertical indicators (NSN 6610-00-473-5046) between April and September 1990, even though the replacement cost of \$675 was established in March 1990 and the repair cost of \$1,116 was established in February 1990. Apparently, ASO did not consider the current pricing data when making the repair decision.
- The Naval Aviation Depot at Alameda, California, repaired 317 temperature indicators (NSN 6685-00-557-7006) during the 2-year period ending September 30, 1990. The indicators are common electronic communication parts. The last known replacement price was \$366 and the

repair cost was \$1,116. Because the item had not been procured since 1984, the replacement price was not updated and the item was excluded from economy-of-repair reviews.

- The Air Force is the primary inventory control and procurement activity for circuit card assemblies (NSN 5841-00-124-4496) used on the F-4 aircraft. The Navy is the secondary manager for the assemblies, with the Naval Aviation Depot at Jacksonville, Florida, maintaining repair facilities for the assemblies. ASO's files showed that the replacement price for the assemblies was \$288 and the Navy repair price was \$872. In March 1991, the Air Force Logistics Command confirmed to us that the replacement price for the assemblies was \$288. Since ASO is not the primary inventory control activity for this item, it is excluded from economy-of-repair reviews.

Management of Consumables Is Being Transferred

In July 1990, DOD approved a Defense Management Report Decision on inventory control point consolidation. The decision transfers management responsibility for 981,000 military service-managed consumables to the Defense Logistics Agency over a 3-year period, beginning in mid-1991. The items to be transferred include 335,000 consumable items managed by the Navy.

Given the forthcoming transfer, it is more important than ever that the Navy's categorization of repairables and consumables be current and accurate. If items that should be categorized as consumables remain incorrectly categorized as repairables, the items will not be transferred. Naval Supply Systems Command officials agreed that increased emphasis should be placed on economy-of-repair reviews, considering the transfer of consumables to the Agency.

Conclusions

Navy policies require economy-of-repair reviews for questionable repairable items. However, most items are excluded from this review process because they are procured by the other military services or have not been procured in the past 2 years. As a result, the Navy is repairing many spares that could be more economically replaced.

We believe that economy-of-repair reviews should be made on all items if there are indications that replacement is less costly than repair. The source or lack of recent procurements should not be factors in deciding to make these reviews. Up-to-date repair and replacement prices are necessary in any event to properly manage the repairables program and make effective economy-of-repair reviews. The impending transfer of

consumable items to the Defense Logistics Agency emphasizes the importance of economy-of-repair reviews to determine if replacement is cheaper than repair.

Recommendations

We recommend that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to increase emphasis on economy-of-repair reviews by ensuring that:

- All items are reviewed if there are indications that replacement is less costly than repair, including those procured by other services and those that have not been purchased recently.
- Current pricing data is used to make repair versus buy decisions.

Agency Comments and Our Evaluation

Although DOD agreed that emphasis should be placed on economy-of-repair reviews and that current pricing data should be used, it did not agree that the actions we recommend are necessary. DOD stated that appropriate procedures are already in place to ensure that items are reviewed where appropriate and that current replacement prices are used when practical. DOD added that extensive analysis is required to determine a current price for an item that does not have a recent procurement price on file. DOD stated that many older items in inventory have been replaced by newer, improved items and it often is either impractical or uneconomical to obtain current prices for the older items.

We do not agree that appropriate procedures are in place. If this were the case, most items where data shows that replacement is cheaper than repair would not be excluded from detailed economy-of-repair reviews. Excluding items that have not had a procurement in the past 2 years creates a situation where an item may never be reviewed even though it may be cheaper to replace the item. If sufficient numbers of failed parts are available to satisfy requirements through repair, the parts will be repaired continually, without economy-of-repair reviews, because the item will not have had a procurement in the past 2 years.

Although some items have been replaced by newer, improved items, the less-than-preferred older items are still in the supply system and are being used and repaired. Because the older items are needed, economy-of-repair reviews should be made to determine whether replacement is cheaper than repair. Unless these reviews are made, the Navy will not know if it is following its own policy of replacing items rather than

repairing them if the repair cost is equal to or greater than the replacement cost.

Updating replacement prices for items that have not had recent procurements would not necessarily require extensive analysis. One option would be to obtain estimated replacement prices from manufacturers. Another option would be to use an inflation indexing system to update old replacement prices. If the indexed replacement prices are less than the current repair prices, economy-of-repair research could be pursued. A third alternative could be a combination of indexed prices and manufacturer estimates. Replacement prices first would be indexed and then manufacturer estimates would be obtained where indexed replacement prices were lower than repair prices.

In summary, we still believe that a repair-versus-replacement analysis is needed if there are indications that replacement would be less costly than repair. Accordingly, we still feel our recommendations are valid and our alternatives meet the intent of the recommendations.

Repair Program Data Is Not Accurate

Repair survival rates represent the percentage of failed parts that will be returned to usable condition through repair. Repair turnaround times represent the length of time it takes to repair items. We found that records on repair survival rates and repair turnaround times are not accurate. ASO and SPCC records on the 145,334 repairable items managed by them showed that repair survival rates for 15,326 items and repair turnaround times for 48,995 items deviated from acceptable standards. From random samples of these items, we found that the records frequently were not accurate and tended to overstate the repair requirements. Overstated requirements ultimately lead to the accumulation of excess stocks.

Repair Survival Rates Are Inaccurate

The maintenance of accurate records on repair survival rates is important because erroneous rates can have significant adverse effects. Understated survival rates generate excess usable stock because repair actions will be taken on more failed parts than are necessary. Overstated survival rates can cause stock shortages because insufficient numbers of failed parts will be repaired. Also, an inordinately low survival rate may indicate that an item should be classified as a consumable item and be replaced rather than repaired. The parts that repair activities try to repair, but cannot, are thrown away.

Naval Supply Systems Command officials told us that some parts for older weapons systems with low survival rates must be repaired because the part can no longer be procured. However, the officials believed that, in general, survival rates of less than 70 percent may indicate that items should be replaced rather than repaired and should be researched for accuracy. We found that ASO and SPCC do not routinely perform this research.

Our analysis of data in the repair management files showed that 2,958 of 61,422 items managed by ASO and 12,368 of 83,912 items managed by SPCC had survival rates of less than 70 percent. We randomly selected 25 of ASO's 2,958 items and asked ASO to assess the validity of the low survival rates. ASO determined that the survival rates were inaccurate for eight items and changed the file data to reflect accurate survival rates. ASO did not change the survival rates on the other 17 items because they generally either were being repaired by another military service or currently were not being repaired.

The following examples show how understated survival rates result in overstated requirements.

- ASO data showed a 60-percent survival rate for fuel tanks (NSN 1560-00-943-1869) used on the A-4 aircraft. The Naval Aviation Depot at Pensacola, Florida, is responsible for repairing the tanks, which have a replacement cost of \$7,028. ASO's research on the tanks showed that the survival rate should have been 80 percent. Increasing the survival rate reduced procurement requirements for replacement tanks from nine to six, or by \$21,084.
- ASO data showed a 58-percent survival rate for electronic control boxes (NSN 1660-00-921-8441) used on the H-46 helicopter. The Naval Aviation Depot at Cherry Point, North Carolina, is responsible for repairing the boxes, which have a replacement cost of \$5,700. ASO's research showed that the survival rate should have been 71 percent. Increasing the survival rate reduced procurement requirements for replacement boxes from five to four, or by \$5,700.

Repair Turnaround Times Are Inaccurate

The length of time it takes to repair an item is a determinant of the replacement quantity that is stocked for a repairable item. Reducing repair turnaround times can decrease the need for additional purchases of repairable items because unserviceable assets are returned to use more quickly. One of the goals of DOD's inventory reduction plan is to minimize the need to stock replacements by shortening repair cycles and repairing only those assets needed for replacement.

Naval Supply Systems Command officials stated that repair turnaround times of over 90 days for aviation items and over 150 days for ship items could be excessive and should be reviewed for accuracy. We found that ASO and SPCC do not routinely make these reviews.

Our analysis of data in the repair management files showed that 5,121 of 61,422 items managed by ASO and 43,874 of 83,912 items managed by SPCC had turnaround times that exceeded the 90-day and 150-day standards suggested by the Naval Supply Systems Command. We randomly selected 25 of ASO's 5,121 items and asked ASO to assess the validity of the turnaround times. After researching the items, ASO changed the repair management file repair turnaround times for 23 of the 25 items. The repair turnaround times were increased for 4 items and reduced for 19 items, including 14 reductions to 90 days or less. In any case, the items would be repaired; however, the reductions in turnaround time had the effect of decreasing the need for additional purchases of replacement items.

For example, ASO's repair turnaround time for oscillator units (NSN 5895-00-908-1717), a common electronic communication part, was 253 days. ASO determined that the actual repair times for the oscillator units averaged 45 days over the prior 3 years. ASO changed the repair management file to reflect the actual turnaround time. Similarly, ASO's repair turnaround time for elevator assemblies (NSN 1560-00-786-9498) used on the A-3 aircraft was 165 days. ASO determined that the actual repair times averaged 90 days over the prior 3 years. ASO changed the repair management file to reflect the actual turnaround time.

Conclusions

Survival rate and repair turnaround time records used to help manage the Navy's repair program are inaccurate. Reviewing data on survival rates and turnaround times that deviate from what Naval Supply Systems Command officials believe are acceptable standards would help ensure that better data is available for use in managing repair programs. More accurate data would reduce the chances of generating excess assets caused by understated survival rates and increased inventories caused by overstated turnaround times.

Recommendations

We recommend that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to implement procedures to ensure the accuracy of data used to manage repair programs. Specifically, we recommend that the Commander routinely isolate data that deviates from acceptable standards, review the data for accuracy, and revise the data that is inaccurate.

Agency Comments and Our Evaluation

DOD agreed that the data used to manage the repair programs should be accurate but did not agree that the actions we recommend are necessary. It stated that appropriate procedures are already in place to ensure accurate data. DOD also stated that survival rates and turnaround times are periodically reviewed and adjusted for out of tolerance or deviant conditions. According to DOD, acceptable standards vary by type of item and are not the same for all items. It stated further that our sample items may vary from the norm because initial analysis indicates that they are older versions of related families of items, and many require additional modifications to be brought up to the latest specifications.

Although procedures exist to ensure accurate data, we found that they are not adequate. During our review, we asked ASO to assess the validity of the survival rates for 25 items and the turnaround times for another

25 items. In researching the items, ASO found many inaccuracies and changed the survival rates on 8 of 25 items and the turnaround times on 23 of 25 items. The large number of changes means that the data was inaccurate irrespective of whether the item was an older version requiring additional modifications or a newer version not requiring modifications.

Although the sizes of our random samples were relatively small, we believe the results of ASO validations show that the Navy's current procedures are not adequate to ensure that data on survival rates and repair turnaround times are accurate or that requirements are computed accurately. Therefore, we still believe that our recommendations are valid and need to be implemented to produce accurate data.

With regard to DOD's comments on acceptable standards, we did not intend to imply that 70 percent is an acceptable survival rate for all items or that 90 and 150 days are acceptable turnaround times for all items. As our report states, these numbers were general benchmarks provided by Naval Supply Systems Command officials. The officials told us that survival rates and turnaround times should be researched for accuracy when they deviate from these general benchmarks.



Comments From the Department of Defense



ASSISTANT SECRETARY OF DEFENSE

WASHINGTON, DC 20301-8000

OCT 7 1991

(L/SD)

Mr. Frank C. Conahan
Assistant Comptroller General
National Security and International
Affairs Division
U.S. General Accounting Office
Washington, DC 20548

Dear Mr. Conahan:

This is the Department of Defense (DoD) response to the General Accounting Office (GAO) draft report, "NAVY SUPPLY: Some Aircraft and Ship Parts Should be Replaced Rather Than Repaired," dated July 29, 1991 (GAO Code 394363), OSD Case 8784. The Department nonconcurs with the majority of the findings and all the recommendations. The Department review of the draft report indicates that the GAO does not understand that inactive inventory is considered during the repair requirements determination process, not after the repair order is issued using an inactive inventory indicator. Furthermore, the GAO based its recommendations on faulty data.

The Department's investigation shows that, of the 1,473 line items identified by the GAO as generating 6,067 repair actions at the Ships Parts Control Center, only 59 line items with 158 repair actions actually occurred during the period in question. An evaluation of the data for the Aviation Supply Office is still underway, but preliminary analysis indicates a similar deficiency.

The Department agrees that current price data should be used to make repair-or-replace decisions when current replacement prices are available during economy of repair reviews. However, we do not agree that it is economical or practical to accomplish an Economic Repair Analysis on less-than-preferred items that do not have a recent procurement price on file.

The detailed DoD comments on the draft report findings and recommendations are provided in the enclosure. The Department appreciates the opportunity to comment on the draft report.

Sincerely,

A handwritten signature in cursive script, reading "David J. Berneau".

DAVID J. BERTEAU
PRINCIPAL DEPUTY ASD(F&L)

Enclosure

GAO DRAFT REPORT - DATED JULY 29, 1991
(GAO CODE 394363) OSD CASE 8784

"NAVY SUPPLY: SOME SHIP AND AIRCRAFT PARTS SHOULD
BE REPLACED RATHER THAN REPAIRED"

* * * * *

FINDINGS

- **FINDING A: Repairables.** The GAO observed that Navy inventories include two types of material--(1) consumables, which are disposed of when replaced, and (2) repairables, which are returned to the supply system for repair when replaced. The GAO reported that the Aviation Supply Office and the Ships Parts Control Center are the inventory control points responsible for determining and executing Navy repair requirements. The GAO further reported that the Aviation Supply Office manages 61,000 depot level repairable items valued at \$11.3 billion, and the Ships Parts Control Center manages 105,000 depot level repairables valued at \$2 billion.

The GAO found that the Navy uses its own depots, commercial repair facilities, and other Military Service repair facilities to make depot level repairs. The GAO explained that the inventory control points determine who will do the repair on the basis of repair price and repair turnaround time considerations. The GAO also found that, generally, repairs are less costly and take less time than purchasing new items. The GAO noted that Navy policy requires that broken or defective items be repaired unless (1) they can be replaced at a lower cost, or (2) the Navy already has an excess of the item. The GAO found that the Navy obligated \$1.1 billion for the depot-level repair program in FY 1990. (Report table 1.1 shows the obligations by organization and type of repair activity.) (p. 1, pp. 10-13//GAO Draft Report)

DOD RESPONSE: Concur.

Now on pp 2. 8-10

Now on pp. 11-12.

- **FINDING B: Policies Prohibit Repair of Unneeded Assets.** The GAO reported that Navy policy prohibits the repair of assets in depot repair programs when new or reconditioned assets are in long supply in the supply system. The GAO found that, in addition, the Navy uses a Master Repairable Item List of all repairable items to inform shore activities and operating forces where and how to ship unserviceable depot level repairables. Moreover, the GAO found that the Office of the Chief of Naval Operations also requires that long supply assets be used in lieu of concurrent rework. (pp. 14-16/GAO Draft Report)

DOD RESPONSE: Concur. The Department considers the term "long supply" as misleading, however. The correct term to use to refer to inventory that exceeds current budget year requirements is "inactive inventory."

- **FINDING C: Procedures for Identifying Long Supply Assets Are Inadequate.** The GAO reported the Fleet Material Support Office developed a computer program for assigning long supply indicators that the Aviation Supply Office and the Ships Parts Control Center could use to provide repair activities with data on the long supply status of items. The GAO explained that the program assigns a long supply indicator to an item if the number of on hand, ready for issues repairables is greater than the higher of:
 - a 30-month supply of assets, or
 - sufficient assets to satisfy known budget year requirements and unfunded war reserves.

The GAO reported, however, the Aviation Supply Office determined that the use of the Fleet Material Support Office program resulted in an unmanageable number of items indicated as being in long supply. The GAO found that, therefore, the Aviation Supply Office developed a program that changed the criteria for classifying items in long supply, and decreased the number of items indicated as being in long supply.

The GAO also reported that the Ships Parts Control Center does not use a long supply indicator to identify long supply items in its repairable management files or in its Master Repairable Item List. The GAO noted that Ships Parts Control Center officials stated that they rely on other means to prevent repair of items in long supply; for example, they try not to ship failed parts to repair activities unless there is a projected need for the parts.

Now on pp. 12-13.

The GAO compared the number of on hand ready for issue items that were in long supply between April and September 1990 with items that had a long supply indicator in the repairable management files. The GAO analysis showed the 9,881 of the 19,000 Aviation Supply Office depot level repairable aeronautical items in long supply did not have a long supply indicator. The GAO also found that, since the Ships Parts Control Center does not maintain a long supply indicator in its repairable management file, none of the 30,306 depot level repairables in long supply had a long supply indicator. (Report table 2.1 lists long supply items and items with a long supply indicator.) The GAO concluded that Navy procedures for identifying long supply assets in the repair program underestimate the number of items actually in long supply--and, as a result, unnecessary repairs are being made. The GAO further concluded that inadequate procedures for identifying long supply items have affected large numbers of repairable items. (pp. 16-18/GAO Draft Report)

DOD RESPONSE: Nonconcur. The Inactive Inventory (Long Supply) Indicator in the Master Repairable Item List is not used to determine repair requirements, nor is the criteria for determining inactive inventory valid for requirements determination purposes. Navy Inventory Control Points use the Repair Requirements Determination Model to determine repair requirements and Stratification to determine whether an item has inactive inventory. The indicator originally was developed to preclude unnecessarily shipping unserviceables to the repair depots when on-hand inventories did not warrant additional shipments. The Navy plans to delete the indicator from the Master Repairable Item List because it is no longer required for that purpose.

- **FINDING D: Opportunities Exist for Saving Repair Costs.** To determine if repair activities were repairing items in long supply, the GAO determined the total number of items that had ready for issue long supply assets on hand between April and September 1990. The GAO compared the items to repair actions during the same period. The GAO analysis indicated that Navy repair activities made 7,710 repairs costing \$9.2 million on items in long supply. (Of those items, 1,643 repairs were made on Aviation supply Office managed items and 6,067 repairs were made on Ships Parts Control Center managed items. Table 2.2 of the report shows the results.)

The GAO analysis of data at the Aviation Supply Office showed that most unnecessary repairs to long supply items were made by commercial and other Military Service repair activities. (The GAO noted that the Ships Parts Control Center repair management

file does not identify whether Navy, other Military Service, or commercial repair activities were used to make the repairs.)

The following are examples the GAO found of unnecessary repairs made by repair activities:

- three fuel injection nozzles (NSN 2915-00-126-5730),
- eight circuit card assemblies (NSN 5998-00-004-3820),
- eight servocylinders (NSN 1650-00-011-9022), and
- one horizontal stabilizer (NSN 1560-00-256-4420), used on the A-7 aircraft. (pp. 19-21/GAO Draft Report)

Now on pp 13-15

DOD RESPONSE: Nonconcur. Of the 1,473 line items identified by the GAO as generating 6,067 repair actions at the Ships Parts Control Center, only 59 line items with 158 repair actions actually occurred during the period in question. The balance were valid repair actions completed in prior quarters for items in short supply at the time of repair initiation and should not have been considered in the GAO review. An evaluation of the data for the Aviation Supply Office is still underway, but preliminary analysis indicates a similar deficiency.

- **FINDING E: Policy Requires Replacement When Economical.** The GAO reported that, according to Navy policy, items should be replaced rather than repaired if the repair cost equals or exceeds the replacement cost. The GAO found that the Aviation Supply Office and the Ships Parts Control Center periodically analyze their files to identify items having the potential to be changed from repair to replacement status. The GAO also found that the Aviation Supply Office generates quarterly reports for all items where file data shows that the repair price is equal to or greater than the replacement price, and the Ships Parts Control Center generates similar reports on an annual basis. The GAO observed that, from those reports, items are selected for detailed economy of repair reviews, but the selected items make up only a small portion of the total number of items in the reports.

The GAO reported that most items are excluded from the detailed economy of repair reviews. The GAO noted that Aviation Supply Office and Ships Parts Control Center officials stated that they do not research items procured by other Services because they believe they have no control over the procurement price. The GAO also noted that those officials further stated that they also do not research items that have not had a procurement in the past

two years because they consider the prior procurement price as too old to compare with current repair prices.

The GAO also reported that Naval Supply Systems Command officials said the main problem with economy of repair reviews is that old replacement prices are not updated by the inventory control points. The GAO found that such updating had been discontinued because of higher priority work and because manufacturers were reluctant to provide estimated prices. The GAO noted Command officials contended that the inventory control points should maintain current pricing data. In addition, the GAO noted, those same officials also maintained that items procured by other Military Services should not be excluded from economy of repair reviews--because the principle of comparing replacement prices to repair prices is the same whether the item is procured directly from a commercial manufacturer or indirectly through another Service. (pp. 24-26/GAO Draft Report)

DOD RESPONSE: Partially concur. The Department policy is to replace items rather than repair if the repair cost is equal to or greater than replacement. Extensive analysis is required to determine a current price for an item that does not have a recent procurement price in file. Many older items in inventory have been replaced by newer, improved items, and it is often either impossible or uneconomical to obtain current prices for the older items.

- **FINDING F: Opportunities Exist for Savings.** The GAO reported that, at the time of the GAO review, the Aviation Supply Office files identified 1,157 items and the Ships Parts Control Center's files identified 439 items as potentially uneconomical to repair because of high repair costs. The GAO analysis of 25 randomly selected items identified as repairable by the Aviation Supply Office indicated that it would be more economical to replace 18 of the items rather than repair them. The GAO found that the combined unit replacement costs for the 18 items amounted to \$17,415, while the combined unit repair costs amounted to \$25,986. The following examples were cited by the GAO to illustrate instances where replacement costs are lower than repair costs:

- eight vertical indicators (NSN 6610-00-473-5046),
- 317 temperature indicators (NSN 6685-00-557-7006),
- circuit card assemblies (NSN 5841-00-124-4496), used on the F-4 aircraft.

Now on pp. 18-19.

Now on pp. 18-20

The GAO observed that economy of repair reviews should be made on all items where there are indications that replacement is less costly than repair. The GAO held that the source or recentness of procurement should not be factors in deciding to make the reviews. The GAO also maintained that up-to-date repair and replacement prices are necessary, in any event, to manage the repairables program properly, and to make effective economy of repair reviews. The GAO concluded that, contrary to Navy policy, many items are being repaired that could be more economically replaced. (p. 24, pp. 26-29/GAO Report)

DOD RESPONSE: Nonconcur. The GAO compared replacement price on file with repair cost, with no consideration as to the "age" of the replacement price on file. Such a comparison is not valid, since repair costs for the sample items were current--while the replacement costs for the items were, on the average, over four years old. Extensive analysis is required to determine a current price for an item that does not have a recent procurement price on file.

- **FINDING G: Management of Consumables is Being Transferred.** The GAO reported that, in July 1990, the DoD approved a Defense Management Report Decision on inventory control point consolidation. The GAO noted that the decision transfers item management responsibility for 335,000 consumables to the Defense Logistics Agency over a three-year period, beginning in mid-1991. Given the forthcoming transfer, the GAO concluded that it is more important than ever that the categorization of repairables and consumables by the Navy be current and accurate. The GAO noted that Naval Supply Systems Command officials agreed. (p. 28/GAO Draft Report)

Now on p 20

DOD RESPONSE: Concur.

- **FINDING H: Repair Survival Rates Are Inaccurate.** The GAO reported that repair survival rates represent the percentage of failed parts that will be returned to usable condition through repair. The GAO explained that understated survival rates generate excess usable stock, because repair actions will be taken on more failed parts than are necessary and overstated survival rates can cause stock shortages because insufficient numbers of failed parts will be repaired. Also, the GAO pointed out that an inordinately low survival rate may indicate an item should be classified as a consumable.

The GAO noted that, according to Naval Supply Systems Command officials, some parts for older weapons systems with low survival rates must be repaired because the part can no longer

be procured. The GAO also noted, however, the officials considered that, in general, survival rates of less than 70 percent may indicate the items (1) should be replaced rather than repaired and (2) should be researched for accuracy. The GAO found, however, that the Aviation Supply Office and the Ships Parts Control Center do not perform such research routinely. The GAO analysis of data in the repair management files showed that 2,958 out of 61,422 items managed by the Aviation Supply Office and 12,368 of 83,912 of the items managed by the Ships Parts Control Center had survival rates of less than 70 percent.

The GAO set out the following examples of understated survival rates resulting in overstated requirements:

- fuel tanks (NSN 1560-00-943-1869), used on the A-4 aircraft, and
- electronic control boxes (NSN 1660-00-921-8441).

The GAO concluded that the maintenance of accurate records on repair survival rates is important because erroneous rates can have significant adverse effects. The GAO also concluded that review of data on survival rates that deviate from what Naval Supply Systems Command officials believe are acceptable standards would help ensure that better data is available for use in managing repair programs. Finally, the GAO concluded that more accurate data would reduce the chances of generating excess assets caused by understated survival rates. (pp. 31-33/ GAO Draft Report)

DOD RESPONSE: Nonconcur. The Navy Inventory Control Points, the Aviation Supply Office and the Ships Parts Control Center, compute and review survival rate data at least annually. Both review the rates across all components and make adjustments/ corrections for out-of-tolerance or deviant conditions. Acceptable survival rates vary by item family--it is not 70 percent for all items, as the GAO indicates. Initial analysis indicates that the sample items the GAO researched are older versions of related families of items, and many require additional modifications to be brought up to the latest specifications.

- **FINDING I: Repair Turnaround Times are Inaccurate.** The GAO reported that the length of time it takes to repair an item is a determinant of the replacement quantity that is stocked for a repairable item. The GAO noted that one of the goals of the DoD inventory reduction plan is to minimize the need to stock

Now on pp 23-24

replacements by shortening repair cycles and repairing only those assets needed for replacement. The GAO noted that Naval Supply Systems Command officials stated that repair turnaround times of over 90 days for aviation items and over 150 days for ship items could be excessive and should be reviewed for accuracy. The GAO found that the Aviation Supply Office and the Ships Parts Control Center do not routinely make these reviews. The GAO cited as examples,

- oscillator units (NSN 5895-00-908-1717), and
- elevator assemblies (NSN 1560-00-786-9498).

The GAO concluded that reviews of data on turnaround times that deviate from what Naval Supply Systems Command officials believe are acceptable standards would help ensure better data is available for use in managing repair programs. The GAO also concluded that more accurate data would reduce the chances of increased stockage requirements caused by overstated turnaround times. (pp. 33-35/GAO Draft Report)

DOD RESPONSE: Nonconcur. The Navy Inventory Control Points review and compute repair turnaround times at least quarterly. Both the Aviation Supply Office and the Ships Parts Control Center review the rates across all components and make adjustments/corrections for out-of-tolerance or deviant conditions. Acceptable turnaround times vary by item family--it is not 90 days for aviation items and 150 days for ship items, as the GAO indicates. Initial analysis indicates that the sample items the GAO researched are older versions of related families of items, and many require additional modifications during repair to be brought up to the latest specifications. The sample items would therefore have higher than normal repair turnaround times. While each member of a related family has a distinct repair turnaround time in file, the average turnaround time for the latest version of an item in a related family is recorded against a single stock number.

* * * * *

RECOMMENDATIONS

- **RECOMMENDATION 1:** The GAO recommended the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to implement procedures that give better consideration to long supply assets in repair programs. (p.22/GAO Draft Report)

Now on pp. 24-25

Now on p 15

Now on p. 15.

DoD Response: Nonconcur. The DoD agrees that inactive inventory (long supply assets) should be considered in the repair programs, but contends that appropriate procedures are already in place.

- **RECOMMENDATION 2:** The GAO recommended that the Commander, Naval Supply Systems Command, direct the Aviation Supply Office to use a long supply indicator in the repairable management programs that is consistent with the Navy definition of long supply. (p. 22/GAO Draft Report)

DoD Response: Nonconcur. The Inactive Inventory (Long Supply) Indicator in the Master Repairable Item List is not used to determine repair requirements, nor is the criteria for determining inactive inventory valid for requirements determination purposes. Navy Inventory Control Points use the Repair Requirements Determination Model to determine repair requirements and Stratification to determine whether an item has inactive inventory. The criteria for determining whether an item has inactive inventory is the same for all the Services and is contained in the DoD Stratification Policy (see Department of Defense Instruction 4140.24).

Now on p. 16.

- **RECOMMENDATION 3:** The GAO recommended that the Commander, Naval Supply Systems Command, direct the Ships Parts Control Center to develop a long supply indicator consistent with the Navy definition of long supply and use the resultant indicator in repairable management. (pp. 22-23/GAO Draft Report)

DoD Response: Nonconcur. The DoD response to RECOMMENDATION 2 is also applicable to this recommendation.

- **RECOMMENDATION 4:** The GAO recommended that the Commander, Naval Supply Systems Command, provide all repair activities, including commercial and other Military Service activities, with information that indicates when ready for issue assets already exist in long supply and, therefore, repairs should not be made. (p. 23/GAO Draft Report)

Now on p. 16.

DoD Response: Nonconcur. Whether the repair facility is organic, commercial, or interservice, the Department contracts with them to repair a specific requirement. The workload requirements are based on the computations of the Repair Requirements Determination Model---which does consider inactive inventory.

- **RECOMMENDATION 5:** The GAO recommended that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to increase emphasis on economy of repair reviews by ensuring that

Now on p. 21.

all items are reviewed where there are indications replacement is less costly than repair, including (a) those procured by other sources and (b) those that have not been purchased recently. (pp. 29-30/GAO Draft Report)

DoD Response: Nonconcur. The Department agrees that emphasis should be placed on economy of repair reviews, but contends that the appropriate procedures are in place to ensure items are reviewed where appropriate.

Now on p. 21.

- RECOMMENDATION 6: The GAO recommended that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to increase emphasis on economy of repair reviews by ensuring that current pricing data is used to make repair versus buy decision. (pp. 29-30/GAO Draft Report)

DoD Response: Nonconcur. The Department agrees that current price data should be used to make repair decisions if legitimate replacement prices are available during economy of repair reviews. The Department contends, however, that the appropriate procedures are already in place to ensure current replacement prices are used when practical.

Now on p. 25.

- RECOMMENDATION 7: The GAO recommended that the Secretary of the Navy direct the Commander, Naval Supply Systems Command, to implement procedures to ensure the accuracy of data used to manage repair programs--i.e., routinely (a) isolating data that deviates from acceptable standards, (b) reviewing the data for accuracy, and (c) revising the data that is inaccurate. (p. 36/GAO Draft Report)

DoD Response: Nonconcur. The DoD agrees that the data used to manage the repair programs should be accurate, but contends that appropriate procedures are already in place to achieve this result.

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